A STUDY ON ENERGY ECONOMIZATION OF THE CONSUMERS OF LIQUEFIED PETROLEUM GAS IN UDUMALPET TALUK, TIRUPUR DISTRICT

SUBMITTED TO

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BY

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SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (Autonomous)

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DECLARATION

ACKNOWLEDGEMENT

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DECLARATION

The Principal Investigator declared that the report entitled **"A Study on Energy Economization of the consumers of Liquefied Petroleum Gas in Udumalpet Taluk, Tirupur District"** submitted to **University Grants Commission, Hyderabad** as part of the Minor Research Project is a record of original and independent research work, done by the researcher and it has not previously formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or other similar title to any candidate of any University.

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CHAPTER-I

INTRODUCTION

India's economy is one of the fastest growing economies in the world and has experienced an average 7 % growth rate in the last decade. India accounts for 2.4 % of world energy production and stands at eleventh position in the world in energy production. But the country accounts for 3.5 % of total energy consumption and holds the sixth position in energy consumption. The wide gap between energy production and energy consumption calls for the need to increase the energy production. Our energy needs are growing as a result of continued population increases, economic growth, and individual fuel/energy consumption. At the same time, emissions from fuel wood and fossil fuels, the main energy source for heating in homes and powering our economies, are contributing to climate change and affecting the local air quality. Liquefied Petroleum Gas is used as fuel for thousands of applications. In developing countries the main benefits of LPG is in helping people to switch from unsustainable biomass use to a clean and safe cooking fuel. LPG's domestic uses can never be ignored. It has played a revolutionary role when it comes to changing the face of domestic fuels used for heating and cooking. Energy is vital part of any nations' existence, it is the "life blood'' that drives economic and social development without which it becomes essentially difficult for an individual, community or even a nation to survive.

LPG's domestic uses can never be ignored. It has played a revolutionary role when it comes to changing the face of domestic fuels used for heating and cooking. LPG for household consumption is nearly 89% of total LPG off-take in India. Total LPG consumption in the country for the year 2011-12 is projected to be more than 16.5 MMT (Million Metric Tons) and is expected to grow at 8-9% as envisaged in Vision 2015 document of Ministry of Petroleum and Natural Gas. There are still many rural areas where they have no awareness on use of LPG for domestic purpose. In developing countries the main benefits of LPG is in helping people to switch from unsustainable biomass use to a clean and safe cooking fuel. This provides enormous health benefits helping to avoid the 1.6 million deaths per year from respiratory problems caused by smoke and other pollutants released by inefficient biomass burning in enclosed spaces. It also releases women and children from the drudgery of collecting firewood and health problems

associated with carrying heavy bundles long distances. The main domestic uses of LPG are with respect to lighting, refrigeration, cooking and most of all heating. It is as good for powering standalone stoves and huge cooking stoves. It has been found to be cost effective and hence is used in large scale cooking also. The main reason behind this is easy accessibility, low cost per unit and the environment friendly properties of LPG. Access to clean cooking energy is a particularly gendered issue, because women are primarily responsible for cooking in virtually all cultures. In the past, energy access programmes and policies have focused mainly on providing electricity connections and have neglected cooking energy. While 1.3 billion people lack access to electricity, more than double that number – about three billion people, mainly in South Asia but also in Africa, parts of Latin America and elsewhere – still rely on solid fuels for cooking and heating. Cooking energy access will be a key contributor to meeting Goal 5 on gender equality and to reducing poverty.

There are various traditional as well as modern sources of energy used for cooking purpose. Yet, it is very obvious that many go for LPG. The preference for LPG by the people of both urban and rural areas may be due to its salient features like economy and speedy. Till the end of 20th century it has been moved towards buyers' market. This is mainly due to the incoming of private agencies supplying LPG cylinders. Among the three government agencies supplying LPG such as Indian Oil Corporation, Bharat Petroleum and Hindustan Petroleum, it is the Indian Oil Corporation which introduced LPG in the name "Indane" for the first time in India. Customers' opinion on dealer's trade practices will eventually affect their attitude towards the product on which the dealer provides various services.

Liquefied Petroleum Gas

LPG, otherwise also known as Liquefied Petroleum Gas, is used as fuel for thousands of applications, in commercial business, industry, transportation, farming, power generation, cooking, heating and for recreational purposes. It is actually a mixture of hydrocarbon gases. It includes butylenes, propylene, butane as well as propane, which is present in substantial part. It is a flammable mixture and one needs to be highly cautious when dealing with it. Propane and butane gases that become liquid under pressure and can then be stored in pressurized containers. The proportion of each gas varies depending on the source and climate. Propane is preferred

where the climate is cold and butane where it is warm. LPG has a high energy per unit volume and is convenient to use. Its calorific value per unit volume is about 2.5 times larger than that of natural gas (methane).

LPG: Lower emissions and better health outcomes

LPG scores far better than traditional biomass fuels on virtually all indicators of health impacts: indoor air pollution, fuel collection health impacts, and fires. It significantly reduces indoor air pollution (IAP); and research on exposure-response with respect to child pneumonia shows that compared to fan stoves, chimney/rocket, simple improved stoves and open fires, LPG is the only fuel whose emissions are below the critical level of 10μg per m3 and hence the most likely to yield health benefits. In contrast to LPG, biomass burning typically releases 19 times more emissions per meal. In West Bengal, India, LPG users had consistently better health outcomes than biomass users even controlling for socioeconomic conditions. Also in India in the states of Jharkhand and Chhattisgarh, compared with LPG, biomass was associated with increased risk of preterm delivery, even controlling for socio-demographic differences. However, clean fuels such as LPG must be used consistently without stacking with "dirty" fuels in order to yield health benefits. Consistent and exclusive use of LPG can however be problematic due to low incomes, unreliable supply of LPG, taste and cultural preferences and fears related to LPG use. Yet, according to the WHO, any massive investment clean fuels and clean stoves such as LPG would repay itself many times over in reductions in ill-health and economic benefits. Time gains from reduced illness, fewer deaths, less fuel collection and shorter cooking times account for more than 95% of these benefits. Beyond indoor air pollution, there is a substantial physical burden and drudgery in collecting, transporting and processing biomass, leading to health impacts and accidents. Women firewood collectors suffer from neck aches, headaches, back aches, bruises and animal attacks; prolapsed uterus and degeneration of the cervical spines have also been reported. The limited evidence on the direct health impacts of firewood collection and use suggests that reducing or eliminating firewood collection could yield substantial health benefits, especially for women. However, the connection between health and fuel collection has received much less attention than that between biomass cooking and health.

LPG Agencies in India

LPG here stands for the liquefied petroleum gas which is flammable gas used for several of the purposes all over the world as a fuel in the vehicles and in several of the chemical industry where the flammable gas is required. In several of the uses of the gas the main use of it lies as the cooking gas. In India, the use of LPG in the cooking is very high as compared to the other uses of it. There are various companies in India which are in the business of manufacturing the LPG gas in India. Most of the companies are under the government authority while some of them are private organizations also. The several LPG manufacturing companies are as follows:

Bharat Petroleum Corporation Limited

It is mainly known as the BPCL. The company is very large and mainly a state owned company which is having its headquarters at Mumbai. The company deals in lubricants, fuels and mainly the LPG gases. They are in the field of the manufacturing LPG gases from very long time and have listed themselves in the fortune 500 lists. Bharat Gas is a product of Bharat Petroleum Corporation Limited (BPCL). At present, the Bharat gas has coverage of around 25 million households across the country as well as hundreds of commercial and industrial establishments. Bharat gas has always been the frontrunner in maximizing the efficiency and in enhancing the customer satisfaction.

Hindustan Petroleum Corporation Limited

It is mainly known as the HPCL all over the world. The company is a state owned organization which is mainly involved in the oil refinery mainly LPG gases. HPCL commenced marketing of LPG under the brand name "HP GAS" in 1979 with takeover of these concessionaires and merger with HPCL with a customer holding of 7.8 lakhs. The field marketing set up consists of 32 exclusive LPG Regional Managers. There are sales areas in each region with an exclusive Sales Officer looking after the various aspects of LPG marketing of a particular geographical area including control on the HP Gas distributorships. In addition to Domestic LPG, HPGAS also markets LPG cylinders for Commercial and Industrial purposes and Bulk LPG by tankers for Industries.

Indian Oil

Indian Oil is India's flagship national oil company with business interests straddling the entire hydrocarbon value chain - from refining, pipeline transportation and marketing of petroleum products to exploration & production of crude oil & gas, marketing of natural gas and petrochemicals. It is the leading Indian corporate in the Fortune 'Global 500' listing, ranked at the 83rd position in the year 2012. The Indian oil is that much largest company in the India which is having 10 out of 18 oil refineries in India. It is having its head office at Delhi. The company is the largest in terms of the sales among all the companies in India. For the benefit of its LPG cooking gas customers, Indian Oil is promoting fuel-efficient, safe & quality products through its Indane distributorships.

ONGC

ONGC stands for the oil and natural gas Corporation limited. The company is also a PSU which is headed by the state and having its head office in the degrading. The company is involved in the production, exploration and the refining of the oils and the gases in India. The gases here stand for the LPG gas mainly which is very highly used in India as cooking gas. It is the second largest gas agency in India. ONGC company limited ranks as the numerous Uno oil and gas exploration &production (E&P) in Asia. It contributes over 78% of India‟s oil and gas production. ONGC offers Liquid Petroleum Gas (LPG) for home usage. It offers LPG cylinders in various capacities. It provides easy access to the customer through various modes that includes telephone, SMS, online access etc., It provide home delivery of cylinders. It also offers LPG gas suppliers through pipe lines. ONGC has been ranked to in various international surveys. It also offers the anytime emergency services throughout the country.

LPG and Energy Poverty

In 2012, WLPGA launched the “Cooking For Life” campaign to communicate the health benefits of switching communities from wood, charcoal, dung and other traditional fuels to LPG for cooking. LPG is a clean-burning, efficient, versatile and portable fuel, produced as a by-product of natural gas extraction and crude oil refining. It can be up to five times more efficient (high calorific value) than traditional fuels, produces less air pollutants than kerosene, wood or

coal, and emits about 20% less CO2 than heating oil and 50% less than coal; it also reduces black carbon emissions. Historically the main obstacles to wider LPG use in developing countries have been affordability and availability. LPG is currently used predominantly by the upper half of the income groups in low- and lower-middle-income countries and especially urban and suburban households. However increasingly, LPG is penetrating to lower income households, especially in emerging market countries: Governments in Indonesia, Vietnam, Thailand, Brazil, Senegal Ghana and Morocco have, through deliberate policy, promoted the establishment of LPG infrastructure, and pricing and equipment packages that make LPG accessible to middle and sometimes ever lower income households in urban, suburban and even rural areas. It is clear that there are still many households, of the three billion households without access to clean cooking energy, who could afford to switch to LPG if other obstacles could be reduced. LPG has probably the major role in this multi-pronged solution, as a preferred option for cooking for women in developing countries.

Women want LPG for cooking. Even with constraints such as fears of accidents, often higher fuel expenses, and supply issues, women often choose LPG when they have the option. Fuel switching from traditional biomass fuels to modern fuels for cooking such as LPG can reduce women's work and time burden, improve health and decrease deaths. Secondary benefits can come from how time saved is used by women to improve their and their families' lives, whether through income generation, education or leisure. There are likely to be considerable safety benefits due to switching from kerosene to LPG. Modern energy in the form of LPG can also improve the delivery of health services.

Private LPG companies and entrepreneurs need to continue to develop and share innovative ways to expand markets to lower income households and to engage with women's development. Markets assessments need to be undertaken that take into account not only income levels but also the potential of these innovative approaches. Women's organisations, governments and LPG companies are natural allies in ensuring maximum access to and safety of LPG for cooking. Women's participation in the industry and supply chain, and in monitoring safety practices, can be encouraged through industry groups, including professional women's networks. Women's ownership of LPG assets, creative microfinance and delivery options led by women, and women-to-women sales and consumer education are likely to be effective means of

promotion. Opportunities for synergies between sustainable development goals and LPG promotion, as in the Vida Gas case, need to be identified and moved forward, in cooperation with NGOs and governments. As with rural electrification programmes, productive use components that encourage use of LPG in businesses and social infrastructure (which increases load) can be included in fuel switching programmes. WLPGA's Early Market Guidelines could be expanded beyond technical and regulatory issues, to consider the need to connect all the linkages that will be needed to achieve scaling of LPG as a clean cooking solution that contributes to gender equality and sustainable development programmes.

Direct Benefit Transfer for LPG (DBTL) Scheme

LPG being a clean fuel, its acceptability has been growing across the country and more and more households have been adopting it as its primary cooking fuel. At present around 60% households have been covered by LPG.

The Direct Benefit Transfer for LPG (DBTL) scheme was rolled out in 291 districts in the country from 1st June 2013 in six phases. It covered nearly 10 crore consumers with over 3770 distributors across the three PSU Oil Marketing Companies with an aim to achieve the objective of efficient subsidy administration. An amount of Rs. 5400 crore was successfully transferred to more than 2.8 crore LPG consumers across the country. Based on the JS (MoPNG) Committee recommendations, a DBTL scheme was approved by CCPA in May 2013. The objective of the scheme was to provide the subsidy directly into the Aadhaar linked bank account of domestic LPG consumers up to the capped number of LPG cylinders purchased at market price. The participating companies are OM Cs viz. Indian Oil Corporation Limited (IO CL), Bharat Petroleum Corporation Limited (BPCL) and Hindustan Petroleum Corporation Limited (HPCL).The DBTL scheme envisaged the following features:

- Sale of all LPG cylinders at market price.
- Provision of an advance to finance the first market priced cylinder.
- Actual Subsidy due to a consumer to be transferred into consumers' bank Account for all subsidized cylinders.
- A grace period of 3 months to be provided after the launch of DBTL during Which, consumers who could not join the scheme continued to get LPG cylinders

At subsidized price. Those who joined the scheme during the grace period were

Sold cylinders at market price and received subsidy in their bank account.

- After the expiry of grace period all consumers were required to buy cylinders at Market price and only those who had joined the scheme were to get the subsidy in their bank account
- Other consumers who joined scheme later would get subsidy prospectively in their bank account.

Income Requirements for LPG Subsidy

LPG in India is heavily subsidized, ensuring that the common man doesn't have an additional burden on his head. The cost of subsidized cylinders depends on the city they are used in, ranging between Rs.420 and Rs.465 for a 14.2kg cylinder. In comparison, a non-subsidized cylinder costs anywhere between Rs.593 and Rs.605, a difference of Rs.170. For a normal family, this translates into a huge portion every year, which is why the subsidy amount is critical to them. The government has provided certain measures to ensure that the poor get subsidized LPG. In this manner, it had issued a directive which talks about the income requirements in order to get LPG at subsidized rates. As per this directive, individuals who have an annual income of **Rs.10 lakh or more cannot avail LPG subsidy.** This income could either be the income of a particular individual or the income of his/her spouse.

Statement of the Problem

` LPG is known to be the most useful and effective energy alternative for domestic, as well as business, use. The fact that it is offers multipurpose usage at lower costs than other energy sources, accompanied with its eco-friendly nature, greatly increases the demand among people. This can sometimes make some suppliers charge higher price than they should. Increase in LPG prices has been a politically sensitive matter in India as it potentially affects the urban middle class voting pattern. LPG is subsidized by the government of India. When a government meets a part of the cost of providing a good or service to a beneficiary, this is a subsidy. The purpose of the study is focused to analyze the awareness and satisfaction level of consumers or users towards the LPG subsidy offered by the government. The LPG scheme such as Direct Benefit Transfer (DBTL) helps the public to use LPG at an affordable rate .The study also claims to find

out expediency and justice in the distribution of cylinder and providing subsidies to the consumers. Hence the need of the hour is to analyze the consequences of DBTL scheme in the study area on "A Study on Consumer's Attitude towards DBTL with Special Reference to S.S.Colony in urban area and kannamanayakanoor in rural area of Udumalpet Taluk"

Objectives of the Study:

The study has the following objectives:

- to examine the socio- economic status of the sample respondents;
- study the usage of alternative sources of energy;
- to find out the awareness of conservation of LPG;
- to identify the methods adopted to economize the usage of LPG.

Hypothesis of the Study:

- There is a close relationship between family members and LPG utilization hours per day.

Scope of the Study

The study helps the researcher to have a practical exposure in this specific field.

- The study reveals the economic and health benefit of adopting the LPG Subsidy Scheme.
- The study results will be of a great help to the government to continue the subsidy Scheme in future to empower the women in India.

Limitations of the Study

- It is a micro level study and therefore the findings of the study are applicable only to the market segments possessing the characteristics of S.S.Colony and Kannamanayakanoor only.
- Only the single connection of Bharat LPG users was taken for the study.
- Due to the time constraint the sample size were restricted to 65 respondents from each urban and rural area.

CHAPTER-II
REVIEW OF LITERATURE

A literature review is the synthesis of the available literature regarding the LPG subsidy scheme. This synthesis merges the conclusions of many different sources to explain the overall understanding of the LPG subsidy scheme, thus laying a foundation for both the research question and primary research. The scope and objectives of the study is based on the reviews collected and overviewed by the researcher.

Vinayagamoorthy et al., (2007) in their study entitled, "Study on Service Quality Perception of Domestic LPG", stated that the service marketers have really understood that competition can be well managed by differentiating through quality. Significance of service lies in customer service management. In this the completive environment, service quality has become the success mantra in all service sector. Keeping this in mind, this study has been conducted at Salem city to identify the service quality of Indane gas. The result indicates that customers are not highly satisfied with the service provided by the Indane gas. So the company took some serious action to improve the service quality.

William Young et al., (2009) in their study entitled, "Sustainable consumption: green consumer behavior when purchasing products", concluded that, the green consumers" decision-making processes when buying a technology-based product. The most common green criteria that our interviewees mentioned when they were deciding which consumer electronics products to purchase were mainly what could be classified as: 1. Product environmental performance (energy efficiency, durability, water consumption, LPG conversion, fuel type, fuel consumption and energy ratings); 2. Product manufacturing (recycled material content, chemical content, and reparability); 3.Second hand availability.

Peter Anyon (2009) in his report entitled, "LP Gas: healthy energy for a changing World", concluded that, "Making "clean fuel" choices can directly help to improve the wellbeing of whole communities. Improvements in public health flowing from the use of cleaner fuels not only reduces the cost of providing health care and social services, but also contributes to the broader economy by helping to avoid the impacts of diminished productivity. Overall, LP Gas rates very highly and gives little or no ground to any others in the table, across all of the features

considered to be of greatest importance in a general-purpose fuel. With its intrinsically clean burning characteristics, LP Gas offers a practical avenue towards cleaning up there we breathe. As well as outperforming most traditional fuels, from a health perspective, LP Gas is readily available, convenient and is frequently a lower cost alternative to other energy sources. Saraf et al., (2009) in their study, "Comparative Emission Analysis of Gasoline/LPG Automotive Biofuel Engine" discussed about LPG Emission, "As LPG is stored under pressure, LPG tank is heavier and requires more space than gasoline tank". There is reduction in power output for LPG operation than gasoline operation. LPG system requires more safety. In case of leakage LPG has tendency to accumulate near ground as it is heavier than air. This is hazardous as it may catch fire. LPG has lower carbon content than gasoline or diesel and produces less CO2 which plays a major role in global warming during combustion.

Eric Johnson et al., (2010) in their article, "Clearing the air: black carbon, climate policy and LP gas", concluded that, in the global debate about how to respond to climate change, BC emissions are just beginning to come to the attention of both energy stakeholders and policy makers and this study‟s analysis points to an emerging understanding of BC as one of the key causes of global warming. Indeed, as is noted above, many scientists now rank BC second only to CO2, as the world‟s primary warming emission.

Eric Johnson & Atlantic (2010) in their study, "Substituting LP Gas for Wood: Carbon and Deforestation Impacts", concluded that, by 2015, 445 million people will convert some of their biomass consumption for cooking to LP Gas, by 2030 another 730 million people will follow suit. But, rather than shifting all cooking to 180 kg LP Gas/ household - year, they would shift part of it to LP Gas, 110 kg/household year. Using the same 50/50 split of product and residue, this would spare 440,000 hectares/year of forest by 2015.

Joydeep Mukherjee (2010) in his article entitled, "Distribution & Retailing of LPG in India", concluded that, "We have seen the contrast between the different market segments prevailing in Indian LPG industry. To be more precise, we saw how the domestic segment is quite different from its counterpart industrial and bulk segment, be it the implications of subsidy, demands of users or the interference from the government. Further, we studied the supply and logistic involved in LPG distribution and how the number of agencies in a region are optimized to reduce

the deadweight loss to the society. We had also focused on the marketing strategy which we found to be difficult or at least peculiar, due to the fact that customer couldn't see the product which makes it by large homogenous. Lastly, we dealt with the scope of growth for LPG in Indian market and threat from its close and worthy substitute.

Mônica Cavalcanti Sá De Abreu & Jonatan César Lins (2010) in their study titled, "A Demographic Analysis of Consumer Environmental Attitudes about Liquefied Petroleum Gas in Brazil", concluded that, consumers think environmental and safety issues related to LPG are important but lack information on whether or not companies are taking action on these issues. LPG distributors have an opportunity to strengthen consumer relationships by disseminating practical information to the costumer on the handling of LPG. It is of importance for companies to provide positive feedback on a regular basis in Order to show costumers that they really are making a difference. Businesses which seriously consider environmental issues may create a sustainable competitive advantage.

Vimal Priyan & Karthihaiselvi (2010) in their study, "Customers' opinion towards Indane gas dealers", found that, most of the customers are of the opinion that there is a delay in providing cylinder. It is suggested that there should be one more dealer in Sivakasi so as to distribute gas cylinder quickly. Majority of the customers prefer indane gas for the reasons like economy, convenience, time saving and cleanliness. As LPG has been moved towards buyers market, the dealer should provide better customers service that his competitors in order to have repeated sales, increased clientele and eventually sustainable development.

Daniel Kweku Baah Inkoom & Beatrice Sakyibea Biney (2010), in their study, "The Potential of Liquefied Petroleum Gas (LPG) as a Viable Energy Option for the Industrial Sector in Ghana", concluded that, the problems of LPG used are not confined to just one constraint, although the mixture of constraints that firms face varies from one industry to another. Some of the major factors hindering LPG use in the country are low level of awareness, supply constraints, cost of initial installation, volatile LPG prices, insufficient policy, and institutional framework. There are gains to be made in the industrial utilization of LPG. Some of the potential benefits include: that LPG can be stored, transported, and used virtually anywhere in the country, it does not require gridlines; LPG burns cleanly without smoke or residual particulate matter,

thus avoiding the serious health hazards other fuel might cause to the health of the workers. Manufacturing plants running on LPG produces much less carbon dioxide than the other conventional fuels. The use of LPG would improve the country‟s energy mix and minimize its dependence on RFO and other polluting fuels. What is not clear is whether environmental and safety benefits, alone, give the manufacturer enough incentive to use LPG. Government support for the use of the LPG as should be based on the beneficial environmental impact of LPG, as compared to alternative fuels.

Chike Chikwendu (2011) in his study entitled, "Change-over from Kerosene to LPG use", concluded that, "Making LPG accessible to all through making it available across socioeconomic groups can be achieved by locating LPG depots strategically across the country to assure uninterrupted product availability and price stability.

According to the report, ARGUS LPG World, News, Prices and analysis (2011), stated that, India is making a renew attempt to curb the abuse of heavily subsidized fuel such as LPG. The LPG Industry finds itself as often happens with global political shocks, on the wrong side of the political turmoil. International LPG prices look as they will bulk the normal spring trend and push sharply higher. They have little choice, given the surge in crude prices. LPG price has surge already begun. So the LPG does not appear to have been los companies but also the customers obtain benefits in the form of competitive prices; along with quality services and facilities provided by the LPG gas company. Consumer satisfaction is the basic tenet (true) of modern concept of marketing. It is the basic philosophy of management, which forces the organization to align its actions with the market mandates.

Krishnan Kutty (2012) in his seminar presentation entitled, „Oil & Gas for Sustainable Growth‟ "R&D Intervention in LPG", he concluded that, consequently, the domestic accident due to LPG has been minimized to an insignificant level 0.23 ppm making LPG the safest domestic fuel. Ruangwud Jarurungsipong & Nopalak Rakthum (2012) in their study, Price Controls Support LPG Fuel Consumption argues that, LPG consumption will be significantly reduced if the government allows the retail prices of LPG in all segments to rise to market price levels.

Babasab Patil (2012), conducted a study titled, "Customer satisfaction on bharat gas agencies in Coimbatore", and he concluded that, the gas agency are well established in providing satisfactory after sales services to its customers. By seeing the observations most of the customers are having positive perception towards that particular gas agency and are satisfied with its services such as Availability of Timely and safe delivery, Staff support, Trained Mechanics etc.

Purvin & Gertz (2013) in his articles, "World LPG Market Outlook", stated that, over the past several years, the international LPG industry has seen a gradual shift in world trade patterns. Demand in the East of Suez market has risen faster than LPG supplies in the region.

The concerns derived from the survey can be broadly classified into three areas:

1. Affordability of LPG - Including payment of security deposit and recurring refilling charges
2. Availability of LPG - Including improving last-mile connectivity (increase distributors)
3. Awareness of LPG-–Raising awareness about usage of LPG stoves and safety, as well as advantage for health and environment.

Dr. M. Dhanabhakyam (2014), Humanity faces a unique and far-reaching challenge. Our energy needs are growing as a result of continued population increases, economic growth, and individual fuel/energy consumption. At the same time, emissions from fuel wood and fossil fuels, the main energy source for heating in homes and powering our economies, are contributing to climate change and affecting the local air quality. Liquefied Petroleum Gas is used as fuel for thousands of applications. In developing countries the main benefits of LPG is in helping people to switch from unsustainable biomass use to a clean and safe cooking fuel. LPG‟s domestic uses can never be ignored. It has played a revolutionary role when it comes to changing the face of domestic fuels used for heating and cooking. HPCL commenced marketing of LPG under the brand name "HP GAS". The data is fully based on Primary & Secondary data collection. Four objectives are framed for this analysis. The statistical tools applied for this study are Pearson's correlation coefficient. Through this study the HP Gas Company is suggested to improve their service quality among the consumers.

CHAPTER – III

METHODOLOGY

This chapter gives an outline of research methods that were followed in the study. The researcher describes the research design that was chosen for the purpose of this study and the reasons for this choice. The instrument that was used for data collection is also described and the procedures that were followed to carry out this study are included. The present study comprises both primary and secondary data collected from the LPG domestic consumers of S.S.Colony in urban area and Kannamanayakanoor in rural area of Udumalpet Taluk.

Research Design:

This research is exploratory in nature as it attempts to explore the experiences of mothers of incest survivors. Their subjective perceptions formed the core data of the study; hence it needed the method that would deal with the topic in an exploratory nature.

Primary data: The primary data were collected through the interview schedule from the LPG domestic consumers of the S.S.Colony in urban area and Kannamnayakanoor village in rural area, Udumalpet Taluk.

Sampling design: Convenience sampling technique was used.

Sample Size: Sample sizes of 65 respondents were selected for this purpose of the study from urban and rural respondents in Udumalpet taluk.

Statistical Analysis:

Statistical Tools were applied with the help of Master Table (Ms-Excel) and SPSS Package, the following statistical tools are; Percentage Analysis, Five point Likert scaling techniques and Correlation analysis. This section consists of the following analysis: Percentage Analysis on Demographic profile and related information of the respondents, Likert scaling techniques for awareness level, satisfaction level, overall satisfaction and gathered information.

Summated or Likert Scale

- Summated scale consists of statements that express either a favorable or unfavorable attitude toward the object of interest.
- The respondent is asked to agree or disagree with each statement.
- Each response is given numerical score to reflect its degree of attitude favorableness the scores are totaled to measure the respondents attitude.
- In this study a five point scale is used. A scale value of 1 indicates strong disagreement: 5, strong agreement.
- The totals are calculated as follows

Response categories	Scale value	No. of Respondents (fx)
Strongly agree	5	
Agree	4	
Undecided	3	
Disagree	2	
Strongly Disagree	1	
Total		(∑fx)

- Based on the totals, (∑fx) comparative analysis of response patterns to each statement by members is made.

Chi- Square Test:

Chi Square Test using SPSS has been employed for testing the association between the variables of family members and LPG utilization hours per day.

Period of the study:

The data collection for this study were carried out during the month of June 2018 to November 2018.

CHAPTER-IV

ANALYSIS AND INTERPRETATION

This Chapter deals with analysis and interpretation of the collected data of the presented study. The date collected are classified, tabulated and analyzed with the help of relevant statistical tools for understanding the objectives of the study. This chapter provides the socio-demographic profile of the LPG consumers in the study. The socio-demographic characteristics are important indicators to understand the profile of the LPG consumers. This, in turn, directly influences their willingness and ability to actively engage in purchase of LPG. The indicators that describe the socio-demographic profile of the elderly include: age, gender, marital status, education, occupation, and monthly income, type of family, family size, distant coverage and transport used for bringing LPG for cooking.

Table 1 Socio-Demographic Profile of the Respondents

	No. of Urban Households	**Percentage**	**No. of Rural Households**	**Percentage**
Age				
Below 25 years	8	12.3	14	21.5
25 – 35 years	13	20.1	15	23.1
35 – 45 years	22	33.8	20	30.7
45 -55 years	17	26.1	12	18.5
55 years and above	5	7.7	4	6.2
Gender				
Male	38	58.5	40	61.6
Female	27	41.5	25	38.4
Marital status				
Married	57	87.7	58	89.2
Widow	8	12.3	7	10.8
Education				
Illiterate	15	23.1	26	40.0
Primary	20	30.7	19	29.2
Secondary	25	38.5	15	23.1

Collegiate/Diploma	5	7.7	5	7.7
Occupation				
Coolie	25	38.4	16	24.6
Mill worker	18	27.7	12	18.5
Agriculture	10	15.4	31	47.7
Self-employed	5	7.7	6	9.2
Others	7	10.8	-	-
Monthly income in. Rs				
Below 8000	15	23.0	32	49.2
8000-9000	10	15.4	12	18.5
9000-10000	20	30.8	15	23.1
10000-11000	14	21.6	6	9.2
Above 11000	6	9.2	-	
Type of family				
Joint	18	27.6	30	46.2
Nuclear	47	72.3	35	53.8
Family size				
1-2 members	8	12.4	12	18.5
3-4 members	30	46.2	26	40.0
5-6 members	24	36.9	20	30.7
7-8 members	3	4.5	7	10.8
Distance coverage				
Less than 2 km	12	18.4	-	-
2 to 4km	37	56.9	-	-
More than 4 km	16	24.6	65	100
Mode of Transport				
Two wheeler	18	27.7	15	23.0
Four wheeler	32	49.2	38	58.5
Others	15	23.1	12	18.5

Total	**65**	**100**	**65**	**100**

Source: Primary data

Age:

The table reveals that, in urban sample respondents, majority of 33.8 per cent are in the age group of 35 to 45 years and 30.7 percent are in the same age group from rural respondents and only 7.7. and 6.2 percent of the respondents are in the age group of 55 years and above in both urban and rural area.

It is interesting to note that people who fall in the age groups of 25 to55 years constitute a whopping 80 per cent from both urban and rural area. By this is clearly evident that this age group will prefer to have LPG cylinders.

Gender:

Table 1 shows the gender of the respondents. Under urban households, It is clear from the table that majority 58.5 per cent of the respondents are male consumers and 36 per cent are female consumers having LPG cylinders.

From rural households, It is clear from the table that majority 61.6 per cent of the respondents are male consumers and 38.4 per cent are female consumers having LPG cylinders.

Majority 58.5 per cent, 61.6 of the respondents are male consumers in both urban and households.

Marital status:

The marital status of the urban respondents reveals that 87.7 per cent of them are Married, and only 8 per cent of the respondents are Widow.

In rural sample respondents 89.2 percent cent of them are Married, and only 10.8 per cent of the respondents are from Widow Category.

Majority of 87.7and 89.2 per cent of the respondents LPG consumers are married in urban and rural area respectively.

Education:

The table illiterates that 38.5 per cent of the respondents have secondary education, 30.7 per cent of the respondents have primary education, 23.1 per cent of the respondents are illiterates, 7.7 per cent of the respondents have collegiate education from urban sample respondents.

Majoriy 40 percent of the respondents from rural area are illiterate and only 7.7 percent of the sample respondents have collegiate education.

Majority of 38.5 and 29.2 per cent of the respondents are secondary education in urban and rural areas respectively.

Occupation:

From the table 38.4 per cent of the urban respondents are coolie, 27.7 per cent of the respondents are millworkers, 15.4 per cent of the respondents are in the agricultural activities, workers, 10.8 per cent of the respondents are doing own business, like pettishops, street vendors, 7.7 per cent of the respondents are self-employed.

From the table 24.6 per cent of the rual respondents are coolie, 18.5 per cent of the respondents are millworkers, 47.7 per cent of the respondents are in the agricultural activities, workers, 9.2 per cent of the respondents are doing own business, like pettishops, street vendors.

Majority of 38.4 per cent respondents are coolie in the urban area and 47.7 percent are engaged in agricultural activities in rural area.

Monthly income:

It is clear from the above table that majority of 30.8 per cent of the respondents living in urban area have monthly income of Rs.9000 to 10,000, 23.0 per cent of the respondents have monthly income of below Rs.8000, 21.6 per cent of the respondents have monthly income of Rs.10,000 to11,000, 15.4 per cent of the respondents have monthly income of Rs.8000 to 9000, and 9.2 per cent of the respondents have monthly income of Rs.11,000 to Rs.12,000.

Majority of 49.2 per cent of the respondents living in rural area have monthly income of Rs.9000 to 10,000, 18.5 per cent of the respondents have monthly income of below Rs.8000, 23.1 per cent of the respondents have monthly income of Rs.10,000 to 11,000, 9.1 per cent of the respondents have monthly income of Rs.8000 to 9000.

Majority of 30.8 per cent and 49.2 of the respondents received Rs.9000 to 10,000 as monthly income in both urban and rural areas from udumalpet taluk.

Type of family:

Table shows that out of 65 respondents 72.3 per cent are from nuclear family and only 27.6 per cent are in joint family are from urban sample respondents and from 65 rural respondents it is 46.2 percent and 53.8 respectively.

Majority of 72.3 per cent of the respondents are from nuclear family in urban area and only 53.8 percent are from nuclear family in rural area.

Family Size:

The above table reveals that the majority of 46.2 per cent of the respondents from urban area have 3 to 4 members in their family, 36.9 per cent of the respondents belong to the large family of 5 to 6 members in their family, 12.4 per cent of the respondents 1 to 2 members, 7.6 per cent of the respondents have family size ranging from 7 to 8 members.

Majority 40.0 percent of the rural respondents belong to large family of 5 to 6 members in their family. Majority of 46.2 per cent of the respondents have family size 3 to 4 members. in urban sample respondents.

Distance coverage:

The table reveals that the 56.9 per cent i.e., 37 respondents travelled between the 2 to 4 km to get LPG cylinder, 24.6 per cent of the respondents more than 4 km have to travel distance to get their LPG cylinder,18.4 per cent of the respondents less than 2 km travelled to get LPG cylinders.

Majority 56.9 per cent of the respondents in urban area travelled between 2 to 4 km to get LPG cylinders.

In rural area the respondents travelled 100 percent from the distribution point to get LPG cylinders.

Mode of transport:

Table shows that 49.2 per cent of the respondents used four wheeler to get LPG cylinder from the delivery point, 27.7 per cent of the respondents are used two wheeler and only 23.1 per cent of the respondents used the other type of transport in the form of Bicycle, van and Minidoor vehicles.

Majority 49.2 percent and 58.5 per cent of the respondents from both urban and rural udumalpet taluk use four wheeler to get LPG cylinder from the delivery point.

Types of Energy used

The respondents use various types of energy is used for cooking i.e., a) Liquefied Petroleum Gas, kerosene, electric stove and heater and Fire wood/ agro waste. The following table explains the type of energy used by the sample respondents from urban and rural area.

Table 2 Type of energy used by the respondents

Type of energy	Urban Percentage usage of energy	Rural Percentage usage of energy
LPG	55.0	30.0
Kerosene	19.0	22.0
Electric Stove and Heater	20.0	5.0
Fire wood/ Agro waste	16.0	43.0
Total	**100.0**	**100.0**

Source: Primary data

The table explains that from urban sample respondents, majority 55 percent of Liquefied Petroleum Gas is used for cooking and majority 43 percent of fire wood is used for cooking by the rural respondents. Only 16 percent of firewood energy is used for cooking by the urban sample respondents and only 5 percent of electric energy is used for cooking by the rural respondents.

Hence majority 55 percent of LPG is used for cooking by the urban respondents.

LPG Consumption

Fuel economy is achieved when Liquefied petroleum gas is used by the urban and rural respondents in the place of Kerosene and other combustible products. Use of LPG has a Positive impact on health and hygiene, when used in the place of bio-gas or such other fuel. The Government of India, Offers subsidized cylinders to households under DBTL (Direct Benefit Transfer for liquefied Petroleum Gas) In a year 12 cylinders, are offered under this scheme any consumption over 12 cylinders requires purchase to be made at market prices. A subsidy is given at Rs.750 for every purchase within the permissible limits. LPG consumption is tabulated in Table 3:

Table 3 Consumption of LPG

Area	**Area No of Cylinders used per year**	**No of respondents**
Urban	Upto 9	42
	9-12	29
	More than 12	4
	Total	**65**
Rural	Upto 9	57
	9-12	6
	More than 12	2
	Total	**65**

Source: Primary data

The table reveals that 42 out of the total respondents of 65 in urban area use LPG for cooking annually and 57 percent of the rural respondents out of 65 respondents used 9 cylinders annually for cooking.

Table 4 Refill gap between two cylinders

Variables	No. of. Respondents (Urban)	Percentage	No. of. Respondents (Rural)	Percentage
Below 31 days	14	21.5	3	4.6
31-60 days	16	24.6	12	18.5
61-90 days	25	38.5	15	23.1
91 and above days	10	15.4	35	53.8
Total	**65**	**100**	**65**	**100**

Source: Primary data

Table 4 reveals that majority 38.5 per cent of the respondents refill the cylinders between 31-60 days whereas in rural respondents majority 53.8 percent, refill the cylinders between 91 and above days. Hence, the refilling of cylinders is often done by the urban respondents.

Table-5

Reasons for purchasing LPG under DBTL Scheme

Area	Variables	No of respondents	Percentage
Urban	LPG Subsidy	40	61.5
	Prestigious item	5	7.7
	Increasing income	10	15.4
	Easier and quicker to cook	10	15.4
	Total	**65**	**100**
Rural	LPG Subsidy	40	61.5
	Prestigious item	6	9.2
	Increasing income	12	18.5
	Easier and quicker to cook	7	10.8
	Total	**65**	**100**

Source: Primary data

Table 5 reveals that majority 61.2 percent of urban and rural respondents purchase LPG cylinders because of the subsidy given by the government.

Table-6

Monthly Income of the LPG Consumers

Area	Income (inRs.)	Before joining LPG		After joining LPG	
		No.	Percentage	No.	Percentage
Urban	Below 8000	15	23.0	6	9.2
	8000-9000	10	15.4	12	18.4
	9000-10000	20	30.8	16	24.6
	10000-11000	14	21.6	22	33.8
	11000-12000	6	9.2	9	14.0
	Total	**65**	**100**	**65**	**100**
Rural	Below 8000	32	49.2	18	27.7
	8000-9000	12	18.5	15	23.1
	9000-10000	15	23.1	26	40.0
	10000-11000	6	9.2	6	9.2
	11000-12000	-		-	-
	Total	**65**	**100**	**65**	**100**

Source: Primary data

Before joining LPG subsidy scheme:

The table depicts that majority 30.8 per cent of the respondents received their monthly income range between Rs.9000-10000 before they joining the LPG subsidy scheme in urban area. In rural area, majority 49.2 percent of the respondents have income range of below 8000.

After joining LPG subsidy scheme:

After enrolling in LPG scheme subsidy, 33.8 per cent of the respondents' income is between Rs.10000-11000 in urban area and 40.0 per cent respondents' income is more than Rs.9000-10000 in rural area.

It is seen from the above table that the level of income of the respondents have increased significantly after enrolling in the LPG subsidy scheme, more than Rs.11000-12000 worth of income value increased from 20 per cent to 22 per cent in urban area.

Table-7

Relationship between Family Members and LPG Utilization Hours Per Day

Family members	**No. of Respondents (Urban)**	**LPG Utilization hours per day**	**No. of Respondents**
1-2	8	1-1 .1/2	12
3-4	30	2-2.1/2	32
5-6	24	3-3.1/2	18
7-8	3	4-4.1/2	3
Total	**65**	**Total**	**65**

Source: Primary data

Correlation Result:

Groups	**Calculate r Value**	**Relationship**
Family members and LPG utilization hours per day	0.839	Strong Positive correlation

From the above table clearly indicated that there is a strong positive correlation between family members and LPG utilization hours per day. It is concluded that the LPG utilization hours per day depends on the increase in family members may eventually increase the consumption of LPG and Vice versa.

Table-8

Consumer satisfaction towards DBTL scheme

Factors	Extremely satisfied	Very satisfied	Some what satisfied	Somewhat dissatisfied	Very dissatisfied	Total	Rank
Government support	200	80	15	_	_	**295**	**I**
Documentation process	200	40	30	10	_	**280**	**II**
Additional income	150	80	30	10	_	**270**	**III**
Banker support	175	60	15	10	5	**265**	**IV**
Distributers services	150	40	45	20	_	**255**	**V**

Source: Primary data

Table 8 presented the opinion of the respondents regarding, Government support, Documentation process, Additional income, Banker support and Distributers services.

Before joining in DBTL scheme, respondents were timid, false idea to express their views, consumer increased awareness on Government support and social mobility. But after joining in DBTL scheme, their level of consumer satisfaction has been increased it is provide with Likert analysis.

Majority of the respondents have a positive opinion towards their Government support because the intensity value is 295.

- It could be observed from the table that, the intensity value of 295 shows that Government supports significantly increased for the respondents holds 1st rank.
- The intensity value of 280 indicates holds 2nd rank the satisfaction level of the respondents i.e., Verification of Aadhar card, Ration card, Voter id, Residential address etc., for this is process holds for availing subsidy programme.
- Additional income holds 3rd rank because respondents improved substantially their consumer satisfaction, regarding additional income, consumer use the family

expenditures or savings of subsidy amount. They also check the proper connection cylinder as well as leakages, instructions followed while LPG cylinder.

- The fourth rank holds, banker's support in the form of immediate response in holding account, cordial relationship, delay in payment will intimated, transfer of account is also possible.
- Sample respondents have a last reason for opinion that their Distributers services towards their individual consumption improved substantially to care for their consumer satisfaction, regarding distributers services, easily timed given the LPG cylinder. They also check the proper connection cylinders as well as leakages, instructions followed while the cylinder.

Table-9

Problems faced by the respondents

Factors	SA	Agree	Undecided	Disagree	SD	Total	Rank
Problem with gas booking	25	40	_	30	35	**130**	**VI**
Delayed supply of refilled cylinders	25	40	75	30	10	**180**	**III**
Poor communication on gas booking and delivery time	150	60	15	10	10	**245**	**I**
Waiting time to get the new LPG connection and additional	25	40	45	_	35	**145**	**V**
High installation and additional cost	75	100	_	20	15	**210**	**II**
Irregularity of increasing price	50	40	_	40	25	**155**	**IV**

Source: Primary data

Table 9 presents the opinion of the respondents that before joining in DBTL scheme respondents were having false idea to express their views on Gas booking and delivery time,

their level of problems faced by the respondents have been increased. This can be explained by using Likert analysis.

- It could be observed from the table that, the intensity value of 245 shows that poor communication on gas booking and delivery time significantly increased for the respondents holds 1st rank.
- The intensity value of 210 indicates holds 2nd rank the high installation and additional cost incurred high service charges.
- Delayed supply of refilled cylinders holds 3rd rank because respondents use other kind of fuels such as the induction stove, wood, kerosene charcoal, other biomass.
- The fourth rank holds in the case of irregularity of increasing price which of LPG cylinders cannot be bare by the respondents.
- Sample respondents have opinion that waiting time to get the new LPG connection and additional holds 5th rank, due to respondents' family problem and failure in submitting their documentation in time.
- Problem with gas booking holds 6th rank due to migration and loss of gas entry book by the respondents.

CHAPTER – V

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

LPG is commonly utilized in nearly every industry, households and others for obvious reasons like affordability, utility, eco-friendliness, less perilous than its alternatives and so on. It has certainly ascertained itself to be one of the most reliable and easily manageable fuels. LPG cylinder can be found in almost every Indian household, with it impossible to imagine daily life without it. In rural areas, consumers have to fetch the LPG cylinders for long distances, often from delivery outlets located in other villages. This remains a major disincentive for adopting LPG as the cooking fuel of choice. An awareness campaign is also necessary about the subsidy scheme in place for low-income households, and how the DBT system works. The initial outlay required for getting an LPG connection, by way of deposit, cost of a burner, regulator, etc., is another disincentive for low-income households. To overcome this constraint, the DBTL scheme has been initiated to provide free or subsidized connections to some 50 million poor households over the next four years at a total cost of about Rs.8,000 crore. Switching from 15kg cylinders to 5kg cylinders in rural areas will also help ease the cash-flow constraint for these households by reducing the outlay. Based on the knowledge about these kind of information, the study has progressed with different objectives in focus, and the objectives are listed as follows;

- to examine the socio- economic status of the sample respondents;
- study the usage of alternative sources of energy;
- to find out the awareness of conservation of LPG;
- to identify the methods adopted to economize the usage of LPG.

Findings:

- In urban sample respondents, majority of 33.8 per cent are in the age group of 35 to 45 years and 30.7 percent are in the same age group from rural respondents.
- Majority 58.5 per cent, 61.6 of the respondents are male consumers in both urban and households.
- Majority of 87.7 percent and 89.2 per cent of the LPG consumers are married in urban and rural area respectively.
- Majority of 38.5 and 29.2 per cent of the respondents are secondary education in urban and rural areas respectively.
- Majority of 38.4 per cent respondents are coolie in the urban area and 47.7 percent are engaged in agricultural activities in rural area.
- Majority of 30.8 per cent and 49.2 of the respondents received Rs.9000 to 10,000 as monthly income in both urban and rural areas from udumalpet taluk.
- Majority of 72.3 per cent of the respondents are from nuclear family in urban area and only 53.8 percent are from nuclear family in rural area.
- Majority 40.0 percent of the rural respondents belong to large family of 5 to 6 members in their family. Majority of 46.2 per cent of the respondents have family size 3 to 4 members. in urban sample respondents.
- Majority 56.9 per cent of the respondents in urban area travelled between 2 to 4 km to get LPG cylinders.
- In rural area the respondents travelled 100 percent from the distribution point to get LPG cylinders.
- Majority 49.2 percent and 58.5 per cent of the respondents from both urban and rural udumalpet taluk use four wheeler to get LPG cylinder from the delivery point.
- Majority 55 percent of Liquefied Petroleum Gas is used for cooking and majority 43 percent of fire wood is used for cooking by the rural respondents.
- 42 out of the total respondents of 65 in urban area use LPG for cooking annually and 57 percent of the rural respondents out of 65 respondents used 9 cylinders annually for cooking.
- Majority 38.5 per cent of the respondents refill the cylinders between 31-60 days whereas in rural respondents majority 53.8 percent, refill the cylinders between 91 and above days.

- Majority 61.2 percent of urban and rural respondents purchase LPG cylinders because of the subsidy given by the government.
- Majority 30.8 per cent of the respondents received their monthly income range between Rs.9000-10000 before them joining the LPG subsidy scheme in urban area. In rural area, majority 49.2 percent of the respondents have income range of below 8000.
- Before joining in DBTL scheme, respondents were timid, false idea to express their views, consumer increased awareness on Government support and social mobility. But after joining in DBTL scheme, their level of consumer satisfaction has been increased it is provide with Likert analysis.
- Majority of the respondents have a positive opinion towards their Government support because the intensity value is 295.

Suggestions:

The following are the suggestive measures to economise the usage of LPG in future years;

- Appropriate input control, data validation and strict oversight is essential at the distributor interface to ensure correctness of data entry at their end, which would not only improve the integrity of the consumer database but also eliminate failed transactions arising from incorrect information.
- Audit has noted the decrease in the number of Non Cash Transfer Compliant consumers.
- Given below are safety measures to take in any given situation.
- Get BIS authorized rubber tubes and LPG regulators from certified suppliers only
- Ensure that the company seal and safety cap is fixed securely on your gas cylinder.
- LPG cylinder should be fixed at ground level on a plain surface.
- Make sure that the rubber 'O' ring inside the cylinder valve is intact.
- Be on the alert for any noticeable signs of seepage, be it visual examination or the favourite soap solution test or smell.
- Never use lit match-sticks or candles to look for leakages.
- Always store the cylinder in vertical position at plain level at a well aired place.
- Never keep the LPG cylinder in the cabinet.
- Turn the regulator knob to 'OFF' position once you are done with cooking.

- ❖ Don’t forget to switch off the flame while you change the LPG cylinder .
- ❖ Must change the rubber tube once in six months.

In Case of a Leakage:

- Put out all flames, lights, incense sticks etc.
- Shut down the appliance and turn off the LPG regulator.
- Immediately put on the Safety Cap on the cylinder after the regulator is switched off.
- Keep all the windows and doors open to ensure ventilation. But do not switch on electric fans or exhaust fans for this purpose.

Conclusion:

LPG carries the label of being a ‘clean and healthy fuel’. Therefore, the objective of LPG subsidies is that if provided across the country at lower rates, households across the board will increasingly shift from using the more polluting solid fuels to LPG. An LPG cylinder has made life easy, being an integral part of our homes. While companies have implemented a number of safety measures to reduce incidents, accidents can happen anytime. In DBT, benefit or subsidy will be directly transferred to citizens living below poverty line. This study recommended that the LPG Subsidy scheme is very useful to the BPL families and the continuation of the scheme will improve the women empowerment in urban and rural area of Udumalpet Taluk.

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APPENDIX

A STUDY ON ENERGY ECONOMIZATION OF THE CONSUMERS OF LIQUEFIED PETROLEUM GAS IN UDUMALPET TALUK, TIRUPUR DISTRICT

Questionnaire

1. Name of the respondent
2. Age
3. Gender: Male/Female
4. Marital Status: Married/Unmarried
5. Occupation of the respondent: Coolie/ Mill worker/Agriculture/ self- employed/ others
6. Education Level : Primary/Secondary/College/Diploma/Illiterate
7. Monthly Income of the respondent (in Rs) :

   Below 8000/ 8000-9000/9000-10,000/10,000-11,000/11,00& above
8. Type of the family: Nuclear/ Joint
9. Size of the Family : 1-2/3-4/5-6/7-8
10. Distance coverage to get cylinder:
11. Mode of transport used for lifting LPG cylinder: two wheeler/ four wheeler/ others
12. Refill the between the cylinders: Below 31 days/31-60 days61-90 days/91 and above days
13. Reasons for purchasing LPG: LPG Subsidy/ Prestigious item/ Increasing income/

    Easier and quicker to cook
14. Are you a member of DBTL Subsidy scheme : Yes/ No

    If yes means What is your monthly before joining in LPG Scheme/ After Joining in Subsidy Scheme
15. How many hours used per day? 1-1 .1/2/2-2.1/2/3-3.1/2/4-4.1/2
16. Attitude towards DBTL Scheme :

    Government support/

    Documentation process/

    Additional income/

    Banker support/

    Distributers services
17. Problems faced by the respondents:

Factors	SA	Agree	Undecided	Disagree	SD
Problem with gas booking					
Delayed supply of refilled cylinders					
Poor communication on gas booking and delivery time					
Waiting time to get the new LPG connection and additional					
High installation and additional cost					
Irregularity of increasing price					